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Term:

l2 and L3

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<u>L4</u>	l2 and L3	11	<u>L4</u>
<u>L3</u>	phytochrome	340	<u>L3</u>
<u>L2</u>	cca1	53	<u>L2</u>
<u>L1</u>	phytochrome regulated transcription	3	<u>L1</u>

END OF SEARCH HISTORY

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(FILE 'HOME' ENTERED AT 12:15:38 ON 20 JAN 2004)

FILE 'AGRICOLA, BIOSIS, CAPLUS, CABA' ENTERED AT 12:16:04 ON 20 JAN 2004

L1 176 SEA ABB=ON PLU=ON CCA1
L2 15638 SEA ABB=ON PLU=ON PHYTOCHROME
L3 47 SEA ABB=ON PLU=ON L1 AND L2
L4 20 DUP REM L3 (27 DUPLICATES REMOVED)
D 1-20 TI
D 8,12,16,19,20 IBIB ABS

FILE HOME

FILE AGRICOLA

FILE COVERS 1970 TO 15 Dec 2003 (20031215/ED)

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FILE COVERS 1969 TO DATE.

CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT
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FILE CAPLUS

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FILE CABA

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L4 ANSWER 8 OF 20 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
ACCESSION NUMBER: 2002:338597 BIOSIS
DOCUMENT NUMBER: PREV200200338597
TITLE: **Phytochrome** regulated transcription factor for
control of higher plant development.
AUTHOR(S): Tobin, Elaine M. [Inventor, Reprint author]; Sun, Lin
[Inventor]; Wang, Zhi-yong [Inventor]
CORPORATE SOURCE: Los Angeles, CA, USA
ASSIGNEE: The Regents of the University of California
PATENT INFORMATION: US 6388172 May 14, 2002
SOURCE: Official Gazette of the United States Patent and Trademark
Office Patents, (May 14, 2002) Vol. 1258, No. 2.
<http://www.uspto.gov/web/menu/patdata.html>. e-file.
CODEN: OGUPE7. ISSN: 0098-1133.
DOCUMENT TYPE: Patent
LANGUAGE: English
ENTRY DATE: Entered STN: 12 Jun 2002
Last Updated on STN: 12 Jun 2002

AB The present invention involves the isolation and characterization of the first discovered **phytochrome**-regulated transcriptional factor, a protein designated **CCA1** which binds to the promoter region of the chlorophyll binding protein gene (Lhcb1*3) of Arabidopsis. The Lhcb1*3 gene of Arabidopsis is known to be regulated by **phytochrome** in etiolated seedlings where a brief illumination by red light results in a large increase in the level of mRNA from this gene. A DNA binding activity, designated CA-1, that interacts with the promoter region of Lhcb1*3 was previously discovered in cellular extracts. This binding activity was used to obtain a cDNA clone for a transcription factor that binds specifically to the Lhcb1*3 promoter. Modification of the expression of **CCA1** using techniques of genetic engineering results in unexpected changes in the timing of plant flowering. When **CCA1** is overexpressed, it appears that the normal circadian rhythms of the plant are disrupted. The plants take a significantly longer time to reach flowering even in the presence of day length conditions that normally induce flowering. Thus, a method of extending vegetative growth and delaying flowering is provided.

L4 ANSWER 12 OF 20 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:852605 CAPLUS
DOCUMENT NUMBER: 136:244509
TITLE: **Phytochrome** and circadian clock regulation
of the **cca1** and **lhcb** genes in Arabidopsis
AUTHOR(S): Ong, May Santiago
CORPORATE SOURCE: Univ. of California, Los Angeles, CA, USA
SOURCE: (2000) 225 pp. Avail.: UMI, Order No. DA9999008
From: Diss. Abstr. Int., B 2001, 61(12), 6340
DOCUMENT TYPE: Dissertation
LANGUAGE: English
AB Unavailable

L4 ANSWER 16 OF 20 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
ACCESSION NUMBER: 2003:131724 BIOSIS
DOCUMENT NUMBER: PREV200300131724
TITLE: **CCA1** is a transcription factor associated with
circadian rhythms.
AUTHOR(S): Tobin, Elaine M. [Reprint Author]; Andronis, Christos
[Reprint Author]; Green, Rachel M. [Reprint Author]; Ong,
May S. [Reprint Author]; Sugano, Shoji [Reprint Author]
CORPORATE SOURCE: Department of Molecular, Cell and Developmental Biology,
U.C.L.A., Los Angeles, CA, USA
etobin@ucla.edu
SOURCE: Plant Biology (Rockville), (1999) Vol. 1999, pp. 23. print.

(2)

Meeting Info.: Annual Meeting of the American Society of Plant Physiologists. Baltimore, Maryland, USA. July 24-28, 1999. American Society of Plant Physiologists (ASPP).

DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 12 Mar 2003
Last Updated on STN: 12 Mar 2003

L4 ANSWER 19 OF 20 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
DUPLICATE 10

ACCESSION NUMBER: 1998:347266 BIOSIS
DOCUMENT NUMBER: PREV199800347266
TITLE: Constitutive expression of the CIRCADIAN CLOCK ASSOCIATED 1 (CCA1) gene disrupts circadian rhythms and suppresses its own expression.
AUTHOR(S): Wang, Zhi-Yong; Tobin, Elaine M. [Reprint author]
CORPORATE SOURCE: Dep. Mol. Cell Dev. Biol., UCLA, Los Angeles, CA 90095-1606, USA
SOURCE: Cell, (June 26, 1998) Vol. 93, No. 7, pp. 1207-1217. print. CODEN: CELLB5. ISSN: 0092-8674.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 13 Aug 1998
Last Updated on STN: 13 Aug 1998

AB The CIRCADIAN CLOCK ASSOCIATED 1 (CCA1) gene encodes a MYB-related transcription factor involved in the **phytochrome** induction of a light-harvesting chlorophyll a/b-protein (Lhcb) gene. Expression of the CCA1 gene is transiently induced by **phytochrome** and oscillates with a circadian rhythm. Constitutive expression of CCA1 protein in transgenic plants abolished the circadian rhythm of several genes with dramatically different phases. These plants also had longer hypocotyls and delayed flowering, developmental processes regulated by light and the circadian clock. Furthermore, the expression of both endogenous CCA1 and the related LHY gene was suppressed. Our results suggest that CCA1 is a part of a feedback loop that is closely associated with the circadian clock in Arabidopsis.

L4 ANSWER 20 OF 20 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2004) on STN DUPLICATE 11

ACCESSION NUMBER: 97:68154 AGRICOLA
DOCUMENT NUMBER: IND20592419
TITLE: A Myb-related transcription factor is involved in the **phytochrome** regulation of an Arabidopsis Lhcb gene.
AUTHOR(S): Wang, Z.Y.; Kenigsbuch, D.; Sun, L.; Harel, E.; Ong, M.S.; Tobin, E.M.
CORPORATE SOURCE: University of California, Los Angeles, CA.
AVAILABILITY: DNAL (QK725.P532)
SOURCE: The Plant cell, Apr 1997. Vol. 9, No. 4. p. 491-507
Publisher: [Rockville, MD : American Society of Plant Physiologists, c1989-
CODEN: PLCEEW; ISSN: 1040-4651
NOTE: Includes references
PUB. COUNTRY: Maryland; United States
DOCUMENT TYPE: Article
FILE SEGMENT: U.S. Imprints not USDA, Experiment or Extension
LANGUAGE: English

AB We have isolated the gene for a protein designated CCA1. This protein can bind to a region of the promoter of an Arabidopsis light-harvesting chlorophyll a/b protein gene, Lhcb1*3, which is necessary

for its regulation by **phytochrome**. The **CCA1** protein interacted with two imperfect repeats in the Lhcb1*3 promoter, AA(A/C)AATCT, a sequence that is conserved in Lhcb genes. A region near the N terminus of **CCA1**, which has some homology to the repeated sequence found in the DNA binding domain of Myb proteins, is required for binding to the Lhcb1*3 promoter. Lines of transgenic Arabidopsis plants expressing antisense RNA for **CCA1** showed reduced **phytochrome** induction of the endogenous Lhcb1*3 gene, whereas expression of another **phytochrome**-regulated gene, rbcS-1A, which encodes the small subunit of ribulose-1,5-bisphosphate carboxylase/oxygenase, was not affected. Thus, the **CCA1** protein acts as a specific activator of Lhcb1*3 transcription in response to brief red illumination. The expression of **CCA1** RNA was itself transiently increased when etiolated seedlings were transferred to light. We conclude that the **CCA1** protein is a key element in the functioning of the **phytochrome** signal transduction pathway leading to increased transcription of this Lhcb gene in Arabidopsis.